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- 1 57. An improved method as in claim 56, wherein at least twenty-five
2 geometries are determined at the outset.--

REMARKS

Claims 1-18 were examined. Applicants gratefully acknowledge the indicated allowability of claims 3, 9, and 18. The claims have been amended, canceled, and new claims added, as noted above. Re-examination and reconsideration of the claims, as amended, are respectfully requested.

As an initial matter, Applicants note that all non-elected claims have now been canceled without prejudice to refiling in a subsequent application.

All claim rejections have been stated over U.S. Patent No. 5,017,133 to Miura alone or in combination with U.S. Patent No. 4,856,991 to Breads et al.¹ Such rejections are traversed in part and overcome in part, as described in detail below.

The Examiner relies on the Miura patent to teach "that it is known to use 7 to 8 different appliances, column 1, lines 35 and 36." While this statement is certainly true, Applicants wish to point out that it falls far short of suggesting the successive use of appliances having different "geometries" selected to progressively reposition teeth.

The meaning of this passage in the Miura patent is better understood by considering the entire paragraph in which it is found. That paragraph is reproduced as follows:

One problem with non-variable force archwires is that the entire length of such an archwire exerts substantially the same force when deflected. Therefore, because it is necessary to impart different forces to different sections of a patient's dental arch, more than one archwire must be employed during the course of treatment. Typically, 7 to 8 different archwires may be used to treat a single patient. With variable force archwires, however, fewer archwires are required.

As a first observation, it is noted that this paragraph does not teach that the different archwires are to be used successively. One skilled in the art could interpret this paragraph as teaching the

¹ There are three Breads et al. patents of record herein. The Office Action does not identify which of the three is being relied on. Based on the Examiner's description of the disclosure at column 16, lines 25-40, however, Applicants have assumed that it is the '991 patent that is being relied on.

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use of a number of different archwires, each spanning a different segment of the dental arch or possibility the use of 7 or 8 different archwires simultaneously, each spanning a portion of or the entire dental arch. Even assuming, for the sake of argument only, that the passage describes the successive use of a plurality of archwires, such archwires would lack the different geometries required by all independent claims presently under consideration. That is, the archwires will either be placed over different portions of the dental arch or more likely be tightened to different tensions over different portions of the dental arch. In any event, there is certainly no teaching or suggestion of use of a plurality of appliances having different geometries.

The teaching in Breads et al. '991 is probably more pertinent, but still falls far short of the present invention which requires the use of at least three positioning appliances having different geometries for effecting tooth movement between an initial and a final position. The passage pointed out by the Examiner is reproduced as follows:

In some teeth-repositioning applications, for example, it may be desirable to move teeth to an ultimately-desired orientation during two stages wherein teeth are moved from an initial maloccluded orientation to an intermediate orientation by means of a first positioner and the teeth are moved from the intermediate orientation to the ultimately-desired orientation by means of a second positioner. In such applications, the durometer of the first positioner may be different from the durometer of the second positioner. Accordingly, the aforescribed embodiments are intended for the purposes of illustration and not as limitation.

While this passage does suggest the use of two different positioners, there is no teaching that the positioners have different geometries. Indeed, it appears that the difference is one of hardness (durometer) rather than geometry.

Each of the rejections over these references will now be addressed in order. Claims 1, 4, 7, and 10, were rejected as being anticipated by the Miura patent. Such rejection is respectfully traversed. As discussed above, nowhere does Miura teach that the use of appliances having different geometries. Thus, the rejection for anticipation must fail.

Applicants further believe that claims 1, 4, 7, and 10, would be non-obvious over Miura, even if combined with Breads et al. While Miura recognizes certain deficiencies

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in the prior art use of multiple archwires, the main thrust of the patent is to teach the use of a variable force archwire which can impart a predetermined range of forces when deflected. While this may be a fine solution, it is entirely different from the method and system described and claimed in the present application. Moreover, it would provide no basis or motivation for one skilled in the art to modify the teachings of Breads et al. in any way.

Claims 5, 6, and 11-13, were rejected as being obvious over Miura. The Examiner argues that the exact number of appliances claimed in the present application would be an obvious matter of choice over Miura.

Applicants respectfully disagree. In the first instance, they believe that independent claims 1 and 7 are allowable over Miura for the all the reasons described above and that all claims dependent thereon are necessarily allowable. Moreover, they believe that the claims which set forth greater numbers of total appliances even further distinguish Miura and/or Breads et al. Miura is concerned only with the use of archwires which do not have different geometries from each other. Thus, it is not understood how it could suggest the use of multiple appliances having different geometries, particularly when there are as many as 27 such devices claimed herein (claims 6 and 13). The teachings of Breads et al. are concerned with finishing positioners which are intended for use after conventional orthodontic treatment of the type using archwires. See, column 6, line 55 *et seq.*, and column 7, line 50 *et seq.* Thus, the use of positioners beyond a maximum of two (as suggested at the end of the patent) is contraindicated.

Claims 1, 2, 4-8, and 10-17, were rejected as being unpatentable over Breads et al. in view of Miura. The combination of Breads et al. and Miura has been discussed above. While Breads et al. suggests the use of a dental finishing appliance having cavities for moving teeth, it nowhere suggests the use of at least three such appliances, each of which has a different geometry. At best, the patent suggests the use of at most two finishing appliances which differ, for example, in their durometer, not geometry. Miura fails to suggest or disclose the use of any type of appliance which even has a geometry for moving individual teeth. Thus, the two patents, even when combined, fall far short of suggesting the claims of the present invention.

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For these reasons, Applicants believe that the independent claims herein are allowable in their forms as filed over the art. Applicants have, however, introduced new claims 45-57 intended to recite the subject matter of allowed dependent claims 3, 9, and 18. In particular, new independent claim 45 is equivalent to allowed dependent claim 3; new independent claim 49 is equivalent to allowed dependent claim 9; and new independent claim 54 is equivalent to allowed dependent claim 18.

If for any reason the Examiner believes that a telephone conference would in any way expedite prosecution of the subject application, the Examiner is invited to telephone the undersigned at 650-326-2400.

Respectfully submitted,

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